I (WE) CLAIM:

1. A method for stabilizing an image plane in medical imaging, the method comprising:

(a) tracking motion within a region; and

(b) automatically altering an acquisition scan plane position relative to a transducer as a function of the motion.

2. The method of Claim 1 wherein (a) comprises performing one of a cross-correlation and a sum of absolute differences.

3. The method of Claim 1 wherein (a) comprises comparing data from a first acquisition with data from a second acquisition.

4. The method of Claim 1 wherein (b) comprises translating and rotating an acquisition scan plane to the acquisition scan plane position.

5. The method of Claim 1 further comprising:

(c) scanning the region with ultrasound energy;

(d) receiving input designating a region of interest within the region;

wherein (b) comprises maintaining the acquisition scan plane position at the region of interest over time.

6. The method of Claim 1 wherein (a) comprises tracking the motion within the region, the region being a three-dimensional volume, and wherein (b) comprises altering the acquisition scan plane position relative to the transducer, the transducer being a multi-dimensional array of elements, the alteration maintaining an acquisition scan plane at a region of interest within the three-dimensional volume over time.

7. The method of Claim 6 further comprising:

(c) electronically steering acoustic energy across the acquisition scan plane;

wherein (a), (b) and (c) are repeated.

8. The method of Claim 6 wherein (a) comprises transmitting acoustic energy to at least three sub-regions of the three-dimensional volume without acquiring data for the entire three-dimensional volume.

9. The method of Claim 8 further comprising:

(c) scanning a representative sample of the entire three-dimensional volume;

wherein (a) comprises comparing data responsive to the acoustic energy transmitted to the at least three sub-regions with data responsive to the representative sample.

10. The method of Claim 8 wherein (a) comprises:

(a1) transmitting at least three grouped sets of beams spaced apart within the three-dimensional volume;

(a2) determining a direction and a magnitude of motion from data responsive to the at least three grouped sets of beams for each of the at least three grouped sets of beams;

wherein (b) comprises altering the acquisition scan plane position as a function of the at least three directions and at least three magnitudes.

11. The method of Claim 1 wherein (b) comprises adaptively altering the acquisition scan plane position in response to the motion;

further comprising:

(c) repetitively scanning the adaptively positioned acquisition scan planes; and

(d) generating two-dimensional images responsive to (c).

12. The method of Claim 11 further comprising:

(e) shifting the two-dimensional images as a function of an initial position of the region of interest.

13. The method of Claim 1 further comprising:

(c) identifying at least one feature within the region;

wherein (a) comprises tracking motion of the at least one feature.

14. The method of Claim 1 wherein (a) comprises tracking one of speckle and a spatial gradient.

15. The method of Claim 1 further comprising:

(c) adjusting a tracking parameter for (a) as a function of a position of a tracking location within the region.

16. A method for stabilizing a scan plane within a volume in medical diagnostic ultrasound imaging, the method comprising:

(a) identifying a region of interest;

(b) acquiring data representing at least portions of a three-dimensional volume positioned at least partly around the region of interest;

(c) acquiring data representing sub-volumes of the three-dimensional volume, (c) using fewer scan lines than (b);

(d) comparing the data representing the sub-volumes with the data representing at least the portions of the three-dimensional volume;

(e) detecting motion as a function of (d);

(f) positioning a two-dimensional scan plane within the three-dimensional volume as a function of the region of interest and the detected motion; and

(g) acquiring a two-dimensional image responsive to the two-dimensional scan plane.

17. The method of Claim 16 further comprising:

(h) repeating (c), (d), (e), (f) and (g) over time such that the two-dimensional scan plane is adaptively positioned through the region of interest over time.

18. The method of Claim 16 wherein (b) comprises acquiring data representing an entire spatial extent of the three-dimensional volume, the entire spatial extent being based on an area of a two-dimensional transducer array used for (b), (c) and (g), wherein (c) comprises acquiring the data representing sub-volumes of the three-dimensional volume, the sub-volumes together being substantially less than the three-dimensional volume.

19. A method for stabilizing imaging within a volume in medical diagnostic ultrasound imaging, the method comprising:

(a) repetitively scanning a two-dimensional area with a multi-dimensional transducer array;

(b) repetitively detecting motion within a volume including the two-dimensional area; and

(c) adaptively re-positioning the two-dimensional area within the volume as a function of the detected motion.

20. A system for stabilizing a scan plane within a volume in medical imaging, the system comprising:

a multi-dimensional transducer array;

a beamformer controller operative to control a position of a data acquisition scan plane relative to the multi-dimensional transducer array;

a beamformer connected with the multi-dimensional transducer array, the beamformer responsive to the beamformer controller and operative to acquire data representing tissue at the data acquisition scan plane; and

a processor operable to detect motion within a volume;

wherein the beamformer controller is operable to alter the position of the data acquisition scan plane in response to the detected motion.

21. The system of Claim 20 wherein the multi-dimensional transducer array comprises a two-dimensional transducer array.

22. The system of Claim 20 further comprising:

a user interface connected with the processor, the user interface operable to receive input indicating a region of interest; and

a display operable to display a sequence of two-dimensional images of the region of interest, the two-dimensional images responsive to the data acquisition scan plane.

23. The method of Claim 1 further comprising:

(c) obtaining data for motion tracking in response to different acquisition parameters than used for imaging.

24. The method of Claim 1 wherein (b) comprises automatically altering an acquisition volume position relative to a transducer as a function of the motion.